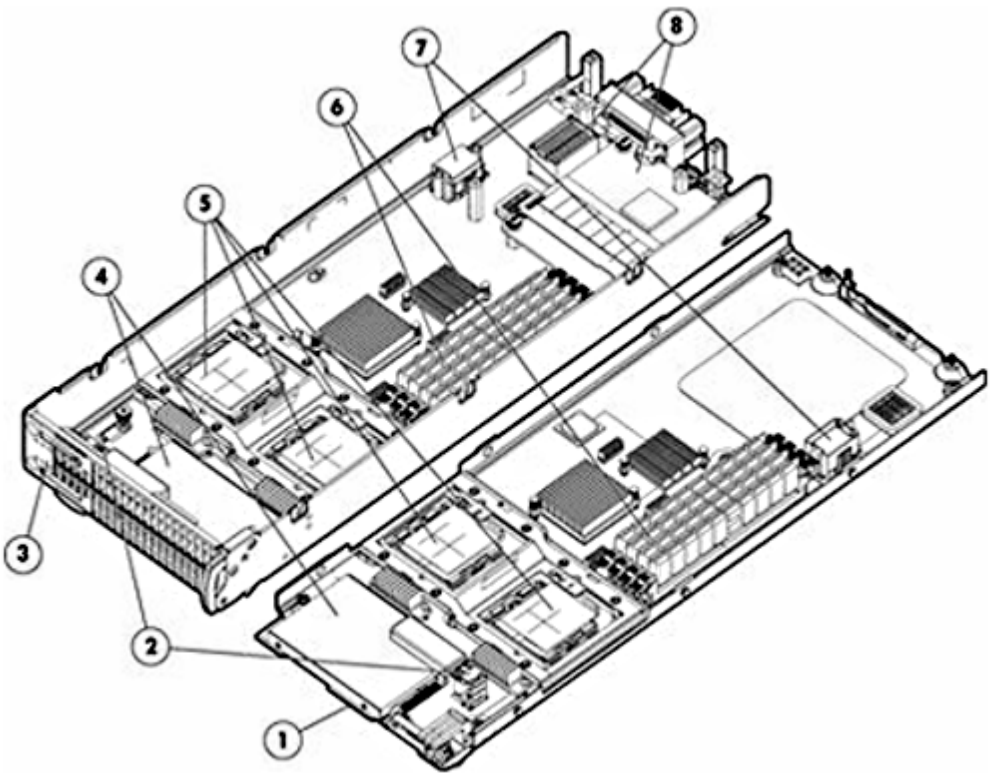
Overview



HP ProLiant BL2x220c Generation 5 (G5) Server Blade

1. Server B
2. Internal USB Connector
3. Server A
4. Small form factor (SFF) SATA drive (or battery carriage for storage controller)
5. Up to two Quad-Core or Dual-Core Intel® Xeon® processors
6. Four (4) PC2-5300, Registered DIMMs (DDR2-667) Memory Slots
7. Server interconnection
8. Type I Mezzanine slots (1 per node)

What's New

- Support for QLogic 1GbE iSCSI Adapter for HP BladeSystem c-Class
- Support for 16 GB Registered PC2-5300 2 x 8 GB Dual Rank Memory Kit

At A Glance

This document covers the HP ProLiant BL2x220c G5 server blade only. For more information on HP BladeSystems c-Class Infrastructure and HP BladeSystem c-Class Interconnect Components, please see the following QuickSpecs:

HP BladeSystem c-Class c7000 Enclosure QuickSpecs:
http://h18004.www1.hp.com/products/quickspecs/12810_div/12810_div.html

Overview

HP BladeSystem c-Class c3000 Enclosure QuickSpecs:
http://h18004.www1.hp.com/products/quickspecs/12790_div/12790_div.html

HP BladeSystem c-Class Infrastructure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12517_div/12517_div.html

HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html

The HP ProLiant BL2x220c provides maximum 2-socket x86 server blade density with benchmark leading power efficiency. HP ProLiant BL2x220c server blade includes 2 server nodes per blade providing up to 256 processor sockets/1024 processor cores in 40U of rack space. All specifications listed per node (2 nodes per blade chassis):

- Processor:
  - Up to two Quad-Core Intel® Xeon® 5400 sequence processors
  - Up to two Dual-Core Intel® Xeon® 5200 sequence processors
  - Intel 5100 chipset supporting up to a 1333 MHz Front Side Bus
  - 667 MHz, 1066 MHz or 1333MHz Front Side Bus
- Memory:
  - Up to 32 GB (4 x 8 GB) of memory, supported by (4) slots of PC2-5300 Registered DIMMs, 667 MHz
  - Low-power memory support
  - Advanced ECC memory support
  - Memory interleaving (2x1)
- Internal Drive Support:
  - 1 fixed small form factor SATA drive (120GB)
- Network Controller:
  - Two (2) embedded Gigabit Server Adapters
- Mezzanine Support:
  - One (1) I/O expansion slots via mezzanine card (Type I only)
    - Dual-Port Fibre Channel Mezzanine (4-Gb) options for SAN connectivity (Choice of Emulex or QLogic)
    - Ethernet adapter Mezzanine options for additional network ports
    - 4X DDR InfiniBand (IB) Mezzanine (20 Gb/s) options for low latency server interconnectivity
- Internal USB Support:
  - One (1) internal USB 2.0 connector for security key devices and USB drive keys
- Form Factor:
  - Half height c-Class Server Blade
- Management:
  - Integrated Lights-Out 2 (iLO 2) Standard Blade Edition per server node with virtual KVM and graphical remote console at no additional cost
- Operating Systems:
  - Supports Windows, Linux, Netware, and Solaris Operating Systems
- Enclosures:
  - HP offers three different c-Class server blade enclosures to meet your individual needs:
    - The HP BladeSystem c7000 rack enclosure is 10U high and holds up to 16 ProLiant BL2x220c Blades (32 server nodes) plugged vertically.
      NOTE: Ten (10) fans are required in the c7000 enclosure.
    - The HP BladeSystem c3000 rack enclosure is 6U high and holds up to 8 HP ProLiant BL2x220c Blades (16 server nodes) plugged horizontally.
    - The HP BladeSystem c3000 tower enclosure is designed with casters for sites without racks and holds up to 8 HP ProLiant BL2x220c Blades (16 server nodes) plugged vertically.
      NOTE: Six (6) fans are required in the c3000 enclosure.
  - Server blades, storage blades, interconnect modules, power supplies, fans, and redundant Onboard Administrator modules are all designed to fit into the c3000 and c7000 enclosures.
  - For additional enclosure information, please see:

http://h18004.www1.hp.com/products/blades/components/enclosures/c-class/index.html

- Warranty:
  - This product is covered by a global limited warranty and supported by HP Services and a worldwide network of HP Authorized Channel Partners. Hardware diagnostic support and repair is available for one year from date of purchase. Support for software and initial setup is available for 90 days from date of purchase. Enhancements to warranty services are available through HP Care Pack services or customized service agreements. SATA hard drives have a one year warranty.
  - NOTE: Server warranty includes 1 year Parts, 1 year Labor, 1-year on-site support. Warranty repairs may be accomplished through the use of Customer Self Repair (CSR) parts. These parts fall into two categories: 1) Mandatory CSR parts are designed for easy replacement. A travel and labor charge will result when customers decline to replace a Mandatory CSR part; 2) Optional CSR parts are also designed for easy replacement but may involve added complexity. Customers may choose to have HP replace Optional CSR parts at no charge. Additional information regarding worldwide limited warranty and technical support is available at: http://h18004.www1.hp.com/products/servers/platforms/warranty/index.html

Standard Features

NOTE: For a brief, printer friendly data sheet that describes this product and informs you of the essential capabilities and specifications, please visit: http://h71028.www7.hp.com/erc/downloads/4AA1-9633enw.pdf

Processor	Quad-Core Processor Option Kits NOTE: BL2x220c G5 does not support 1600 FSB or 120W and 150W processors. Quad-Core Intel® Xeon® processor L5420 (2.50 GHz, 1333 FSB, 50W) Quad-Core Intel® Xeon® processor L5410 (2.33 GHz, 1333 FSB, 50W) NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details. Quad-Core Intel® Xeon® processor E5450 (3.00 GHz, 1333FSB, 80W) Quad-Core Intel® Xeon® processor E5440 (2.83 GHz, 1333 FSB, 80W) NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details. Quad-Core Intel® Xeon® processor E5430 (2.66 GHz, 1333 FSB, 80W) NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details. Quad-Core Intel® Xeon® processor E5420 (2.50 GHz, 1333 FSB, 80W) NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details. Quad-Core Intel® Xeon® Processor E5410 (2.33 GHz, 1333 FSB, 80W) NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details. Dual-Core Processor Option Kits Dual-Core Intel® Xeon® processor X5260 (3.33 GHz, 1333 FSB, 80W) NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details. Dual-Core Intel® Xeon® processor L5240 (3.00 GHz, 1333 FSB, 40W) NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details. Dual-Core Intel® Xeon® processor E5205 (1.86 GHz, 1066 FSB, 65W) NOTE: Offered through Configure-To-Order only. See Factory Integrated Models section for more details. NOTE: Intel® 5400 series processors are Quad-Core and support 64-bit Intel VT. Intel®. NOTE: For the Intel® 5400 series, the letter preceding the model number indicates the performance/wattage of the processor. "X" denotes High Performance/Wattage; "E" denotes Enterprise Performance/Wattage (Mainstream); and "L" denotes Lower Wattage.
Upgradeability	Upgradeable to 2 processors per server node.
Cache Memory	2x6 MB shared L2 cache (5400 Sequence) 1x6 MB shared L2 cache (5200 Sequence)
Chipset	Intel®-5100 chipset

Standard Features

Memory	Type	PC2-5300 DDR2 Registered DIMMS at 667 MHz
	Standard	4 GB (2 x 2 GB) per server node
	Maximum	32 GB (4 x 8 GB) per server node NOTE: Memory must be installed in pairs.
Network Controller	Dual-port Broadcom 5715S based Gigabit Ethernet network adapter per server node One (1) additional 10/100 network adapter dedicated to iLO 2 Management per server node NOTE: The Gigabit Ethernet adapters transmit from the server only at 2000 Mbps, full duplex per port. However, within a Linux environment, the speed can be reduced or "throttled" using a feature available within the Linux operating system; see the white paper at http://h71028.www7.hp.com/ERC/downloads/4AA1-5513ENW.pdf for more information. The 10 Gigabit KX-4 NC512m adapter transmits from the server only at 20 Gbps (20,000 Mbps), full duplex. Once the adapter signal reaches the interconnect within the blade enclosure and communicates outside the blade enclosure to the LAN, the blade interconnect uplink types and settings determine the cable media, speed, duplex mode, and auto negotiation mode. Interconnects are available with Ethernet uplinks supporting 10/100/1000T, 10/100/1000 SFP, 1000 SX fiber, and 10Gb KX-4.	
I/O Expansion Slots	One I/O expansion x8mezzanine Type I slot per server node	
Integrated Manageability	Integrated Lights-Out 2 (iLO 2) Standard Blade Edition per server node (integrated on motherboard)	
Maximum Internal Storage	Non Hot Plug Serial ATA (SATA)	120GB SATA 1 x 120GB Serial ATA (Per server node)
Graphics	Integrated ATI RN-50 1600x1280x64K 16M color (64 MB DDR1 memory)	
Graphics Resolution Supported	Resolution Color Depths	Depths 1600x1280, 64K, 256, 16 1280 x 1024, 16.7M, 64k, 256.16 1024 x 768, 16.7M, 64k, 256,16 800 x 600, 16,7M, 64k, 256, 16 640 x 480, 16,7M, 64k, 256, 16

Standard Features

Partner Blade Support	Partner blades such as the PCI Expansion Blade, Tape Blade and SB40c are not supported on the BL2x220c.
Virtual Connect Support	Virtual Connect will only be supported with version 1.30 or later of the HP c-Class Virtual Connect Firmware. This firmware release may also require other subsystem firmware upgrades please consult http://h18004.www1.hp.com/products/blades/components/c-class-compmatrix.html for more information.
Onboard Administrator	The BL2x220c is supported with Onboard Administrator firmware version 2.20 or later. This firmware release may also require other subsystem firmware upgrades please consult http://h18004.www1.hp.com/products/blades/components/c-class-compmatrix.html for more information.
Fibre Channel on the HP ProLiant BL2x220c server blade	One optional Fibre Channel HBA is supported per node by the HP ProLiant BL2x220c. Mezzanine circuit boards connect directly to the server blade system board. Fibre Channel HBAs are available via option kits and must be ordered separately.
Compatible SAN	HP ProLiant BL2x220c server blades are optimized for HP StorageWorks MSA, EVA and XP HP ProLiant BL2x220c server blades are compatible with select 3rd party SANs (please see blade storage page for more details: http://h18000.www1.hp.com/products/servers/proliant-bl/c-class/storage.html

Insight Control Environment for BladeSystem Management Suite

Insight Control Environment for BladeSystem delivers foundation management for HP BladeSystem lifecycles, including hardware resource deployment, health monitoring, software version control, performance monitoring, vulnerability, scanning and patch management and power management.

HP Control Insight Environment for BladeSystem installs and licenses the following components by default using a wizard-based integrated installer:

- HP Systems Insight Manager
- HP iLO Select Pack
- HP Insight Power Manager
- HP ProLiant Essentials Rapid Deployment Pack
- HP ProLiant Essentials Performance Management Pack
- HP ProLiant Essentials Vulnerability and Patch Management Pack
- HP ProLiant Essentials Virtual Machine Management Pack

Additional ProLiant Essentials software and management tools included on the Insight Control Management kit can be installed manually.

- HP Server Migration Pack - Universal Edition
  NOTE: HP Server Migration Pack - Universal Edition is licensed separately from the Insight Control Environment Suite.
- HP Open Service Event Manager
- HP Instant Support Enterprise Edition

NOTE: HP Server Migration Pack - Universal Edition can be installed from the SMP-Universal CD included in the Insight Control Management media kit.
NOTE: Insight Control Environment for BladeSystem can be installed from the Insight Control Management DVD, which can be delivered with HP BladeSystem c-Class enclosures with a choice of licensing options. Licensing options include a free 30 day evaluation license for 8 servers (default option for every enclosure order), a full purchased license for 8 blade servers or a full purchased license for 16 blade servers). For additional information on HP c-Class Infrastructure please visit HP BladeSystem c-Class Infrastructure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12517_div/12517_div.html
NOTE: For additional product and licensing information about Insight Control Environment for BladeSystem, HP Systems Insight Manager and Essentials software refer to:
http://www.hp.com/servers/proliantessentials.

iLO Power Management Pack for BladeSystem is energy-efficient management software that delivers centralized control, reliable security, and energy savings for your BladeSystem infrastructure. iPMP combines the total control of iLO 2 Advanced in the area of remote management with the energy monitoring and control of the Insight Power Manager to deliver a robust solution capable of full remote control and power management of ProLiant servers through a unified interface within HP Systems Insight Manager.

HP Insight Control Environment for Linux (ICE-Linux) provides comprehensive discovery, imaging & deployment, monitoring, and management for Linux-based ProLiant server platforms. Built on the industry-leading HP Systems Insight Manager framework, this solution integrates open source technology with experience leveraged from HP's Linux products in HP ICLE and HP XC Clusters, while providing paths to the future with developing management technologies

HP Insight Control management suites and most HP ProLiant Essentials include one year of 24 x 7 HP Software Technical Support and Update Service ensuring rapid access to HP support staff and proactive delivery of software updates. From more information about this service, please visit:
http://www.hp.com/services/insight.

Server Management Stand Alone Software Product - ProLiant Essentials	HP Systems Insight Manager	HP Systems Insight Manager (HP SIM) provides a unified, secure and extensible standards-based environment to centrally manage servers, storage and other infrastructure devices, (both HP and non-HP) across multiple operating system platforms.
	ProLiant Essentials Rapid Deployment Pack	Rapid Deployment Pack (RDP) extends HP Systems Insight Manager with a complete deployment solution for HP ProLiant blade servers. RDP provides a central location to configure server hardware, deploy Windows, Linux and VMware ESX operating environments and install HP ProLiant Support Pack drivers using images and scripted profiles.
	ProLiant Essentials Performance Management Pack	Performance Management Pack (offered exclusively through the Insight Control suites) - a performance management solution that identifies and explains hardware performance bottlenecks on ProLiant servers and attached options enabling users to better utilize their valuable resources
	ProLiant Essentials Server Migration Pack - Universal Edition	Upgrading, replacing, or virtualizing your existing server? Effortlessly transition to new virtual or physical HP ProLiant servers or BladeSystem with automated, accurate and affordable migration of OS, application and data. SMP Universal automates the manual processes required for migrating servers between physical or virtual platforms, whether migrating to VMware or Microsoft virtual machines. SMP Universal allows all of the following migrations: • physical to ProLiant • physical to virtual • virtual to virtual • virtual to ProLiant NOTE: For more information, visit: http://www.hp.com/go/migrate.
	Virtual Machine Management Pack	Virtual Machine Management Pack - provides central management and control of virtual machines from Microsoft and VMware. Integrated approach provides the ability to manage both physical and virtual resources from a single management console.
	The Vulnerability and Patch Management Pack	Vulnerability and Patch Management Pack (offered exclusively through the Insight Control suites) - identifies and remediates software security vulnerabilities due to missing patches as well operating system configurations that can be exploited by viruses, worms, and other blended threats.
	Integrated Lights-Out Select Pack	Upgrades the iLO 2 processor with enhanced console sharing and replay, virtual media (floppy, CD/DVD, USB key), virtual folders, historical power reporting, power capping and enterprise security (directory services and two-factor authentication) for servers managed using remote consoles available in iLO 2 Standard and iLO 2 Standard Blade Edition.
	Insight Power Manager (IPM)	Upgrades the single-server remote management capabilities of iLO Select/Advanced to include centralized reporting and policy-based management of power consumption and thermal output provided by the Insight Power Manager. IPM unifies all of this functionality within a single user interface - HP Systems Insight Manager.

		NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to: http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information. NOTE: Selected software packages listed here include one year of 24 x 7 Software Technical Support and Update Service. If you have any questions about this service please visit the HP website at: http://www.hp.com/services/insight
Core Infrastructure Management	SmartStart	SmartStart is a tool that simplifies server setup, providing a rapid way to deploy reliable and consistent server configurations. For more information, please visit the SmartStart Web site at: http://www.hp.com/servers/smartstart. SmartStart version supported (minimum): SmartStart 7.60
	Insight Management Agents	The Insight Management Agents should be installed on all HP servers to present system instrumentation, health and configuration information into HP Systems Insight Manager and the HP System Management Homepage. The HP System Management Homepage aggregates systems data from Insight Management Agents and other HP management tools, providing a consolidated browser-based interface for managing individual servers. Insight Management Agents and The HP System Management Homepage are included on ProLiant Support Packs, and can also be installed using the server profiles provided with the ProLiant Essentials Rapid Deployment Pack. For additional information about the Management Agents and the HP System Management Homepage please visit the management Web site at: http://www.hp.com/servers/manage.
	Subscriber's Choice	Subscriber's Choice Driver and Support Alerts/Notifications is a web-based email subscription service that provides software and driver change notifications for ProLiant products. Sign up at: http://www.hp.com/go/subscriberschoice and customize your profile to receive various new alerts as they become available, on a weekly or monthly basis.
	ProLiant Support Packs and ROMPaq, software	The latest software, drivers, and firmware fully optimized and tested for your ProLiant server and options, available through ProLiant Support Packs the ProLiant Essentials Rapid Deployment Pack, SmartStart or downloaded from software and drivers download pages website at: http://www.hp.com/go/support.

Standard Features

OS Support

Microsoft Windows 2000 Server
Microsoft Windows 2000 Advanced Server
Microsoft Windows Server 2003, Standard Edition
Microsoft Windows Server 2003 R2, Standard Edition
Microsoft Windows Server 2003, Standard x64 Edition
Microsoft Windows Server 2003 R2, Standard x64 Edition
Microsoft Windows Server 2003, Web Edition
Microsoft Windows Server 2003 R2, Web Edition
Microsoft Windows Server 2003, Enterprise Edition
Microsoft Windows Server 2003 R2, Enterprise Edition
Microsoft Windows Server 2003, Enterprise x64 Edition
Microsoft Windows Server 2003 R2, Enterprise x64 Edition
Microsoft Windows Small Business Server 2003, R2
Microsoft Windows 2008
Red Hat Enterprise Linux
Solaris 10 (32 and 64-bit)
SUSE Linux Enterprise Server

NOTE: For an up-to-date listing of the latest software and drivers available for your server, please select your server: http://h20000.www2.hp.com/bizsupport/TechSupport/Product.jsp?lang=en&cc=us&taskId=135&prodTypeId=15351&prodCatId=241435.
NOTE: For more complete and up-to-date information of all supported OSes for ProLiants, certification information and how to buy server operating systems from HP please visit the OS product site at: http://h18004.www1.hp.com/products/servers/software/OEM.html.

Integrated Manageability

Integrated Lights-Out 2 Standard Blade Edition (iLO 2) per server node

- Virtual KVM based remote console
- Virtual media (single server, browser based access only)
- Remote Serial Console
- Virtual Power Button Control
- Virtual Unit ID control
- Integrated Remote Console (ActiveX Control client)
- Dedicated network connectivity
- OS independent hardware health status
- Present server power consumption
- Browser, command line and scripted access
- Automatic IP Configuration via DHCP/DNS/WINS
- Industry Standard 128-bit Secure Sockets Layer (SSL) and Secure Shell security (SSH)
- Advanced Encryption Standard (AES)/Triple Data Encryption Standard (3DES)
- IML and iLO Event Logging
- Support for 12 user accounts with customizable access privilege
- Single sign-on from HP BladeSystem Onboard Administrator

Availability

- Dual-Port Fibre Channel Mezzanine Card per server node for redundant SAN connection
- Two (2) embedded Gigabit Ethernet adapters per server node for redundant LAN connections
- Advanced ECC Memory - can correct a multi-bit error (up to 4 bits) that occurs within one memory chip
- Network adapter teaming (network fault tolerance, transmit load balancing, switch-assisted load balancing)
- Emergency Recovery ROM

Standard Features

Industry Standard Compliance	ACPI 2.0 Compliant PCI 2.2 Compliant WOL Support Microsoft® Logo certifications USB 2.0 Support

Security

- One (1) internal USB 2.0 connector for security key devices and USB drive keys on each server node
- Power-on password
- Administrator's password
- Integrated Lights-Out 2 has 12 customizable user accounts and SSL encryption
- Integrated Lights-Out 2 can be disabled via a Global Setting

Factory Express Portfolio for Servers and Storage

HP Factory Express offers configuration, customization, integration and deployment services for HP servers and storage products. Customers can choose how their factory solutions are built, tested, integrated, shipped and deployed.

Factory Express offers service packages for simple configuration, racking, installation, complex configuration and design services as well as individual factory services, such as image loading, asset tagging, and custom packaging. HP products supported through Factory Express include a wide array of servers and storage: HP Integrity, HP ProLiant, HP ProLiant Server Blades, HP BladeSystem, HP 9000 servers as well as the MSAxxxx, VA7xxx, EVA, XP, rackable tape libraries and configurable network switches.

For more information on Factory Express services on your specific server model please contact your sales representative or go to: http://www.hp.com/go/factory-express.

HP Enterprise Configurator

The HP eCo-Enterprise Configurator now provides factory default racking for our HP hardware portfolio. This approach is aligned with our strategic direction to meet the needs and expectations of our valued customers. If you require "custom" rack configuration, please contact HP's Customer Business Center or an Authorized Partner for assistance.

Service and Support

Support for software and initial setup is available for 90 days from date of purchase. Additional support may be covered under the warranty or available for an additional fee. Enhancements to warranty services are available through HP Care Pack services or customized service agreements.

HP Care Pack services provide total care and support expertise with committed response designed to meet your IT and business needs.

The HP Care Pack service for HP ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.

To fully capitalize on your HP BladeSystem servers' capabilities requires a service partner who thoroughly understands your server technology and systems environment. HP Services, an industry leader in provision of multi vender support solutions provides a range of support services designed to meet the varying needs of business. Whether an SMB or large global corporation HP has a HP BladeSystem server support offer to help you speedily deploy and maximize system uptime.

Recommended Service - Simplify ProLiant solution implementation, maintenance and management.

- Support Service - 4-Hour Response Coverage, 3-Year, 24 x 7, Same Business Day
- Deployment Service - Installation and Start Up for HP BladeSystem Infrastructure

Enhanced Service - Optimize service level to increase IT performance and availability

- Support Service - HP Proactive BladeSystem Service, 1-Year
- Deployment Service - Enhanced Network Installation and Start-up for HP BladeSystem Switches

Installation & Start-Up service for HP BladeSystem Infrastructure plus HP BladeSystem Enhanced Network Installation and Start-UP as per the Customer Description and/or Data Sheet. To be delivered on a scheduled basis 8am-5pm, M-F, excluding HP holidays.

For a complete listing of service offerings and information visit:
http://www.hp.com/services/bladesystemservices
http://www.hp.com/go/proliant/carepack

Quad-Core Models

NOTE: The BL2x220c supports 2 server nodes in each Blade. All options listed are per server node.

HP ProLiant BL2x220c G5 E5450, 4G (2P) 483264-B21	Processor(s) One of the following depending on model	(2) Quad-core Intel® Xeon® Processor E5450 (3.0 GHz, 1333 FSB,80W) per server node (2) Quad-core Intel® Xeon® Processor L5420 (2.5 GHz, 1333 FSB. 50W) per server node
HP ProLiant BL2x220c G5 L5420, 4G, (2P) 467696-B21	Cache Memory	2 x 6 MB Level 2 cache (5400 Sequence)
	Memory	4 GB (2 x 2 GB) PC2-5300, Registered DDR2-667 per server node
	Network Adapter	Dual 1GbE NC326i plus (1) additional 10/100 NIC dedicated to iLO 2 Management per server node
	Storage Controller	Embedded SATA
	Hard Drives	No drives included; (1) SFF Non-Hot Plug SATA drive bay
	Internal Storage	120GB Non-Hot Plug SFF SATA per server node, (1) SFF Non-Hot Plug SATA drive bay
	Optical Drive	None
	Form Factor	Up to 8 half-height blades(16 server nodes) supported in HP BladeSystem c3000 Enclosure Up to 16 half-height blades (32 server nodes) supported in HP BladeSystem c7000 Enclosure

NOTE: This section lists some of the steps required to configure a Factory Integrated Model. To ensure only valid configurations are ordered, HP recommends the use of an HP approved configurator. Contact your local sales representative for information on CTO product offerings and requirements.
NOTE: HP does not allow factory integration of options into standard models listed above.
Configure-to-order server blades must start with a CTO Blade.
NOTE: This product offering does not support HP Factory Express Server Configuration Level 1.
NOTE: FIO indicates that this option is a Factory Installable Option.

Step 1: Base Server Blade Configuration (Select CTO Blade, Server A and Server B)

Models	HP ProLiant BL2x220c G5 CTO Blade	461897-B21
	HP ProLiant BL2x220c G5 Server A CTO Blade	465400-B21
	HP ProLiant BL2x220c G5 Server B CTO Blade	465401-B21
	NOTE: When ordering a BL2x220c all three parts CTO Blade, Server A and Server B must be included on the order. The Server A and Server B blades allow for configuration of each server node with CPUs, Memory and other options. It is not possible to order any of these 3 parts independently.	
	Configurable Model ships with:	
	Dual 1GbE NC326i Dual-port Gigabit Server Adapter per server node plus one (1) additional 10/100 network adapter dedicated to iLO 2 Management	
	Integrated Lights-Out 2 Standard Blade Edition per server node	

Step 2: Choose Required Options for each server node (one of the following from each list unless otherwise noted):

Processors (Up to 2 processors per server node)	For single processor configuration choose:	
	Quad-Core Processor Option Kits	
	Quad-Core Intel® Xeon® processor L5420 (2.5 GHz, 1333 FSB, 50W), FIO Base NOTE: If 2 processors are desired, select one 466658-L21 and one 466658-B21.	466658-L21
	Quad-Core Intel® Xeon® processor L5410 (2.33 GHz, 1333 FSB, 50W), FIO Base NOTE: If 2 processors are desired, select one 466660-L21 and one 466660-B21.	466660-L21
	Quad-Core Intel® Xeon® processor E5450 (3.0 GHz, 1333 FSB, 80W), FIO Base NOTE: If 2 processors are desired, select one 466650-L21 and one 466650-B21.	466650-L21
	Quad-Core Intel® Xeon® processor E5440 (2.83 GHz, 1333 FSB, 80W), FIO Base NOTE: If 2 processors are desired, select one 466652-L21 and one 466652-B21.	466652-L21
	Quad-Core Intel® Xeon® processor E5430 (2.66 GHz, 1333 FSB, 80W), FIO Base NOTE: If 2 processors are desired, select one 466656-L21 and one 466656-B21.	466656-L21
	Quad-Core Intel® Xeon® processor E5420 (2.50 GHz, 1333 FSB, 80W), FIO Base NOTE: If 2 processors are desired, select one 466663-L21 and one 466663-B21.	466663-L21
	Quad-Core Intel® Xeon® processor E5410 (2.33 GHz, 1333 FSB, 80W), FIO Base NOTE: If 2 processors are desired, select one 466665-L21 and one 466665-B21.	466665-L21
	Dual-core Process Option Kits	
	Dual-Core Intel® Xeon® processor X5260 (3.33 GHz, 1333 FSB, 80W), FIO Base NOTE: If 2 processors are desired, select one 483895-L21 and one 483895-B21.	483895-L21
	Dual-Core Intel® Xeon® processor L5240 (3.0 GHz, 1333 FSB, 40W), FIO Base NOTE: If 2 processors are desired, select one 466654-L21 and one 466654-B21.	466654-L21
	Dual-Core Intel® Xeon® processor E5205 (1.86 GHz, 1333 FSB, 65W), FIO Base NOTE: If 2 processors are desired, select one 466669-L21and one 466669-B21.	466669-L21

Memory	1 GB REG PC2-5300 2 x 512 MB Single Rank Kit	408850-B21
	2 GB REG PC2-5300 2 x 1 GB Single Rank Kit	408851-B21
	4 GB REG PC2-5300 2 x 2 GB Low Power Single Rank Kit	483401-B21
	4 GB REG PC2-5300 2 x 2 GB Dual Rank Kit	408853-B21
	8 GB REG PC2-5300 2 x 4 GB Dual Rank Kit	408854-B21
	8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
	16 GB REG PC2-5300 2 x 8 GB Dual Rank Kit	408855-B21
	NOTE: Supports up to 2 DIMM kits (4 DIMMs) per server node.	
	NOTE: Must be installed in pairs.	

Step 3: Choose Additional Options for Factory Integration (One per server node)

NOTE: For additional options, including server blade enclosures interconnect options and power subsystem options; please see the options section below; or the following QuickSpecs:
HP BladeSystem c-Class Infrastructure QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12517_div/12517_div.html
and HP BladeSystem c-Class Interconnect Components QuickSpecs:
http://h18000.www1.hp.com/products/quickspecs/12524_div/12524_div.html.

Hard Drive	HP 120GB 1.5G SATA 5.4K NHP SFF ETY HDD	459357-B21
	NOTE: One per server node.	

Options

Ethernet Mezzanine Options	HP NC326m PCI Express Dual Port 1Gb Server Adapter for c-Class BladeSystem	406771-B21
	HP NC360m Dual Port 1GbE BL-c Adapter	445978-B21
	HP NC373m PCI Express Dual Port Multifunction Gigabit Server Adapter for c-Class BladeSystem	406770-B21
	QLogic QMH4062 1Gb E iSCSI Adapter for HP BladeSystem c-Class	488074-B21
	NOTE: The Gigabit Ethernet adapters above transmit from the server only at 2000 Mbps, full duplex per port. For more information, see the "Network Controller" segment in the Standards Features section for more information.	
Fiber Channel Mezzanine Options	Emulex LPe1105 FC Dual Channel 4Gb, PCI-E-to-Fibre Channel Host Bus Adapter	403621-B21
	QLogic QMH2462 4Gb FC HBA for HP c-Class BladeSystem	403619-B21
HP InfiniBand Mezzanine Options	HP 4X DDR IB Dual Port Mezzanine HCA for HP BladeSystem c-Class	448262-B21
	NOTE: Only a single port can be used on the BL2x220c	
	HP 4X DDR IB Mezzanine HCA for HP BladeSystem c-Class	410533-B21
HP Insight Control Environment for BladeSystem Management Suite	NOTE: Electronic licensing options are available for Insight Control suites software products. Please see the appropriate Insight Control QuickSpecs for additional information.	
	Insight Control Environment for BladeSystem	
	HP Insight Control Environment for BladeSystem, No Media 1-Server License including 1 year of 24x7 Technical Support and Updates	453484-B21
	NOTE: Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	
	HP Insight Control Management Software Media Kit	436222-B21
	NOTE: Insight Control Management DVD media without licenses. Contains Insight Manager and Essentials software products and components licensed by Insight Control Management suites. Uses an integrated installer to perform quick and accurate software installation and updates.	
	NOTE: For additional HP Insight Control Environment, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12631_div/12631_div.html	
	HP Insight Control Environment for Linux	
	HP Insight Control Environment for Linux v2.0, Media pack (CD) - No licenses included	464422-B21
	NOTE: This optional Media pack CD contains the ISO image for HP Insight Control Environment for Linux, HP System Insight Manager, and an integrated installer. Servers must be acquired separately. This Media pack is optional because the latest ISO image and latest updates may be downloaded at no cost from: http://www.hp.com/go/ice-linux (click on Download button).	

Options

	HP Insight Control Environment for Linux v2.0, No Media, 1-Server license, including One year of 24x7 Technical Support and Updates NOTE: This part number can be used to purchase one (1) license with a single activation key. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. One certificate is shipped for each license. NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13019_div/13019_div.html	464423-B21
	HP iLO Power Management Pack for BladeSystems	
	HP iLO Power Management Pack for BladeSystem, No Media, 1-Server License including 1 year of 24x7 Technical Support and Updates NOTE: This option kit includes 1 license for iLO Select and Insight Power Manager. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. NOTE: For additional -HP Insight Power Manager Packs please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12632_div/12632_div.html	442937-B21
Server Management Stand Alone Software Product - ProLiant Essentials	NOTE: Electronic licensing options are available for Insight Control suites and select ProLiant Essentials software products. Please see the appropriate Insight Control and ProLiant Essentials QuickSpecs for additional information.	
	Deploy	
	Rapid Deployment Pack	
	ProLiant Essentials Rapid Deployment Pack No Media 1-Server License including 1 year of 24x7 Technical Support and Updates NOTE: This license allows 1 server to be deployed and managed via RDP. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service. NOTE: For additional ProLiant Essentials Rapid Deployment Pack License Kits- please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/11053_div/11053_div.html	452151-B21
	HP Server Migration Pack - Universal Edition	
	HP Server Migration Pack - Universal Edition, No Media, Physical / Virtual to ProLiant Single Migration License, including 1 year of 24x7 Technical Support NOTE: This license allows 1 physical to ProLiant or virtual to ProLiant migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.	460750-B21

HP Server Migration Pack - Universal Edition, No Media, Physical / Virtual to Virtual Single Migration License, including 1 year of 24x7 Technical Support NOTE: This license allows 1 physical to virtual or virtual to virtual migration. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.	460753-B21
HP Server Migration Pack - Universal Edition, No Media, 1-Year Unlimited Migration License, including 1 year of 24x7 Technical Support NOTE: This license allows unlimited migrations (physical to ProLiant, physical to virtual, virtual to virtual, and virtual to ProLiant) for one year. Customer will receive a printed license entitlement certificate and documentation via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support Service.	460756-B21
NOTE: For additional HP Server Migration Pack - Universal Edition License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12855_div/12855_div.html	
Monitor	
HP Insight Dynamics-VSE without Insight Control Environment, 1-server license including 1 year of 24x7 Technical Support and Updates NOTE: This license supports HP ProLiant ML/DL and c-Class Blade servers. Customer will receive via email a receipt and link to a license entitlement certificate.	483531-B21
HP Insight Dynamics-VSE with Insight Control Environment, 1-server license including 1 year of 24x7 Technical Support and Updates NOTE: This license supports HP ProLiant c-Class Blade servers. Customer will receive a printed license entitlement certificate via physical shipment.	483534-B21
NOTE: For additional HP Insight Dynamics-VSE licenses, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/13050_div/13050_div.html	
Control	
Integrated Lights-Out Select Pack	
ProLiant Essentials Integrated Lights-Out Select Pack, No Media, 1-Server License NOTE: For additional License Kits, please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html	452158-B21
ProLiant Essentials Integrated Lights-Out Select Pack, No Media, 8-Blade License, including 1 year of 24x7 Technical Support and Updates	452161-B21
Featuring: Sophisticated remote control and security features for HP BladeSystem servers and ProLiant ML/DL servers. NOTE: For additional ProLiant Essentials Integrated Lights-Out Value Packs please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12362_div/12362_div.html	
Optimize	
HP Insight Power Manager (IPM)	
HP Insight Power Manager, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates NOTE: Customers purchasing this upgrade must already have an iLO Advanced or Select license on each managed server. Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	452677-B21

Options

	NOTE: For additional -HP Insight Power Manager Packs please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12623_div/12623_div.html	
	ProLiant Essentials Virtual Machine Management Pack	
	ProLiant Essentials Virtual Machine Management Pack, No Media, 1-Server License, including 1 year of 24x7 Technical Support and Updates	452153-B21
	NOTE: Customer will receive a printed license entitlement certificate via physical shipment. The license entitlement certificate must be redeemed online or via fax in order to obtain the license activation key(s). Includes one year of 24 x 7 HP Software Technical Support and Update Service.	
	NOTE: For additional ProLiant Virtual Machine Management Pack License Kits please see the QuickSpecs at: http://h18000.www1.hp.com/products/quickspecs/12328_div/12328_div.html	
	NOTE: Flexible and volume quantity license kits are available for ProLiant Essentials Value Packs. Refer to: http://www.hp.com/servers/proliantessentials or the various ProLiant Essentials Value Pack product QuickSpecs for more information.	
	NOTE: For more information regarding ProLiant Essentials Software, please see the following URL: http://www.hp.com/servers/proliantessentials.	
Processors	Quad-Core Processor Option Kits	
	Quad-Core Intel® Xeon® processor L5420 (2.5 GHz, 1333 FSB, 50W)	466658-B21
	Quad-Core Intel® Xeon® processor L5410 (2.33 GHz, 1333 FSB, 50W)	466660-B21
	Quad-Core Intel® Xeon® processor E5450 (3.0 GHz, 1333 FSB, 80W)	466650-B21
	Quad-Core Intel® Xeon® processor E5440 (2.83 GHz, 1333 FSB, 80W)	466652-B21
	Quad-Core Intel® Xeon® processor E5430 (2.66 GHz, 1333 FSB, 80W)	466656-B21
	Quad-Core Intel® Xeon® processor E5420 (2.50 GHz, 1333 FSB, 80W)	466663-B21
	Quad-Core Intel® Xeon® processor E5410 (2.33 GHz, 1333 FSB, 80W)	466665-B21
	Dual-core Processor Option Kits	
	Dual-Core Intel® Xeon® processor X5260 (3.33 GHz, 1333 FSB, 80W)	483895-B21
	Dual-Core Intel® Xeon® processor L5240 (3.0 GHz, 1333 FSB, 40W)	466654-B21
	Dual-Core Intel® Xeon® processor E5205 (1.86 GHz, 1333 FSB, 65W)	466669-B21
Memory	1 GB REG PC2-5300 DDR2 2 x 512 MB Single Rank Kit	408850-B21
	2 GB REG PC2-5300 DDR2 2 x 1 GB Single Rank Kit	408851-B21
	4 GB REG PC2-5300 DDR2 2 x 2 GB Low Power Single Rank Kit	483401-B21
	4 GB REG PC2-5300 DDR2 2 x 2 GB Dual Rank Kit	408853-B21
	8 GB REG PC2-5300 DDR2 2 x 4 GB Dual Rank Kit	408854-B21
	8 GB REG PC2-5300 DDR2 2 x 4 GB Low Power Dual Rank Kit	483403-B21
	16 GB REG PC2-5300 2 x 8 GB Dual Rank Kit	408855-B21
	NOTE: Supports up to 2 DIMM kits (4 DIMMs) per server node.	
	NOTE: Must be installed in pairs.	

Options

Hard Drives	**SATA Non-Hot Plug Entry (ETY) Disk Drives**	
	HP 120GB 1.5G SATA 5.4K NHP SFF ETY HDD	459357-B21
	NOTE: SATA drives have a 1 year warranty. Please see the SATA Hard Drive QuickSpecs for Technical Specifications such as capacity, height, width, interface, transfer rate, seek time, physical configuration, and operating temperature: http://h18000.www1.hp.com/products/quickspecs/11940_div/11940_div.html (Worldwide)	
USB Options	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B
	HP 1GB USB 2.0 Floppy Drive Key	442085-B21
	HP 256MB USB 2.0 Floppy Drive Key	442084-B21
	External USB 2.0 Multi-Bay II Cradle	PA509A
	Multibay II 9.5mm DVD Drive	PA849A
	1.44MB External USB Floppy Drive	DC141B
	USB Floppy Drive	DC361B
	2004 Standard Keyboard USB	DT528A#xxx
Service and Support Offerings (HP Care Pack Services)	NOTE: The HP Care Pack service part numbers below for ProLiant BL c-Class server blades, cover the server blade and all HP branded hardware options qualified for the server, purchased at the same time or afterwards, internal to the server.	
	Hardware Services On-site Service	
	4-Hour On-site Service, 5-Day x 13-Hour Coverage, 3 Year, Electronic	UK144E
	4-Hour On-site Service, 7-Day x 24-Hour Coverage, 3 Year, Electronic	UK145E
	6-Hour Call to Repair, On-site Service, 7-Day x 24-Hour Coverage, 3 Year, Electronic	UK146E
	Support Plus 24	
	Onsite HW support 24x7, 4hr response and Microsoft O/S SW Tech support offsite, onsite at HP's discretion, 24x7 2hr response time incl. HP holidays, Electronic	UE473E

Memory

NOTE: Memory configurations listed do not apply to "Factory Integrated Models".

DIMM installation guidelines:

1. All DIMMs must be PC2-5300 Registered DDR2, 667 MHz, ECC DIMMS
2. Banks must be populated in sequential alphabetic order, starting with bank 1A
3. Both DIMMs in a memory bank must be identical. Install identical DIMMs as pairs only, starting with DIMM socket 1, bank A. The server blade defaults to Advanced ECC

HP ProLiant BL2x220c Server Blade

Standard Memory

4 GB (2 x 2 GB) per server node (depending on model)of PC2-5300, Registered, DDR2-667 ECC DIMMs

Standard Memory Plus Optional Memory

Up to 20 GB (depending on model) of PC2-5300, Registered, DDR2-667 ECC DIMMs. Memory is available with the installation of optional PC2-5300, Registered, DDR2-667 ECC DIMMs memory expansion kits.

Standard Memory Replaced with Optional Memory

Up to 16GB of PC2-5300, Registered, DDR2 667MHz, ECC DIMMs. Memory is available with removal of standard and the installation of optional PC2-5300, Registered, DDR2-667 ECC DIMM memory expansion kits.

	Memory	Slot			
		1A	2B	3C	4D
Standard	4 GB	2 GB	2 GB	Empty	Empty
Optional	12 GB	2 GB	2 GB	4 GB	4 GB
Maximum	16 GB	4 GB	4 GB	4 GB	4 GB
Optional	20 GB	2 GB	2 GB	8 GB	8 GB
Maximum	32 GB	8 GB	8 GB	8 GB	8 GB

Following are memory options available from HP:

1 GB REG PC2-5300 2 x 512 MB Single Rank Kit	408850-B21
2 GB REG PC2-5300 2 x 1 GB Single Rank Kit	408851-B21
4 GB REG PC2-5300 2 x 2 GB Low Power Single Rank Kit	483401-B21
4 GB REG PC2-5300 2 x 2 GB Dual Rank Kit	408853-B21
8 GB REG PC2-5300 2 x 4 GB Dual Rank Kit	408854-B21
8 GB REG PC2-5300 2 x 4 GB Low Power Dual Rank Kit	483403-B21
16 GB REG PC2-5300 2 x 8 GB Dual Rank Kit	408855-B21

HP ProLiant BL2x220c Server Blade

The BL2x220c Blade has a different I/O mapping for server I/O ports to expansion bays than existing half-height servers. The BL2x220c contains 2 server nodes that share a single half-height bay. Each server has 2x 1-Gbit Ethernet ports, so each half-height bay must therefore support 4 1Gbit Ethernet connections to the Interconnect bays. Full access to all embedded Ethernet ports therefore requires 64 Ethernet connections in the HP BladeSystem c7000 Enclosure or 16 Ethernet connections in the HP BladeSystem c3000 Enclosure. Single server half-height devices, such as the HP ProLiant BL460c and HP ProLiant BL465c Server Blades, only require 32 connections (c7000) and 16 connections (c3000).

As each Ethernet Interconnect device only supports 16 downlinks to the servers it is necessary to dedicate additional bays to Ethernet. To gain access to all embedded Ethernet connections users must install 4 Ethernet Interconnects in Bays 1,2,3,4 for the c7000 enclosure and 2 Ethernet Interconnects in Bays 1 & 2 in the c3000 enclosure.

When installing a BL2x220c into an existing enclosure the following rules must be followed otherwise the Blade will not boot due to an e-keying error.

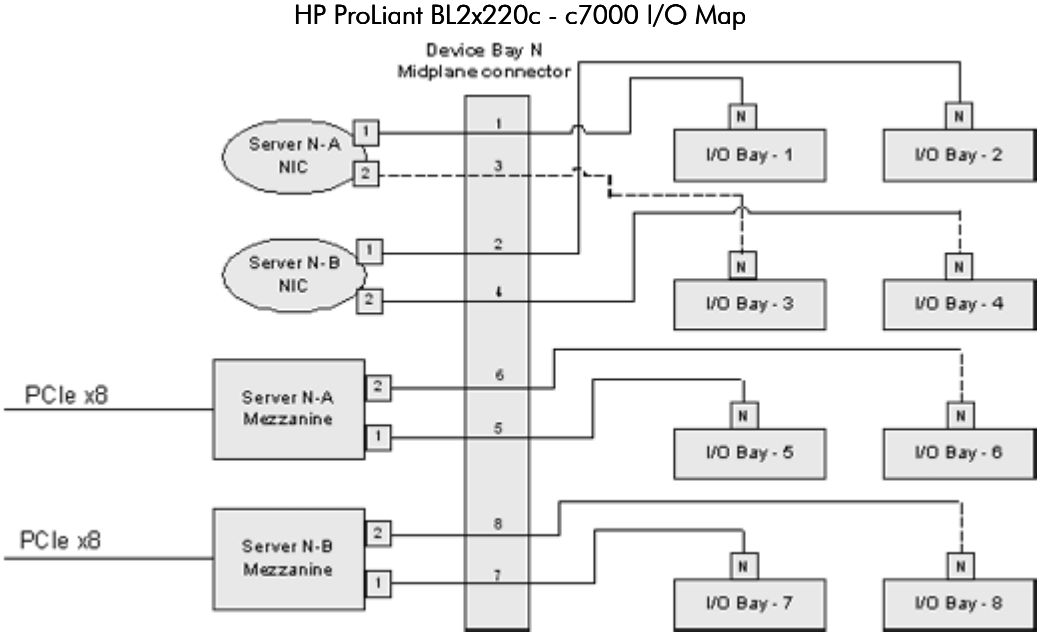
c7000 Enclosure

- Interconnect bays 1,2,3,4 are reserved for Ethernet
- Fibre Channel, InfiniBand or other Interconnects must be placed in bays 5 & 6 or 7 & 8
- Bays 5 & 6 must match the mezzanine type plugged into Server A
- Bays 7 & 8 must match the mezzanine type plugged into Server B

c3000 Enclosure

- Interconnect bays 1 & 2 are reserved for Ethernet
- Fibre Channel or other Interconnects must be placed in bays 3 & 4
- Bays 3 & 4 must have interconnects of the same type or be empty

HP ProLiant BL2x220c - c7000 I/O Map

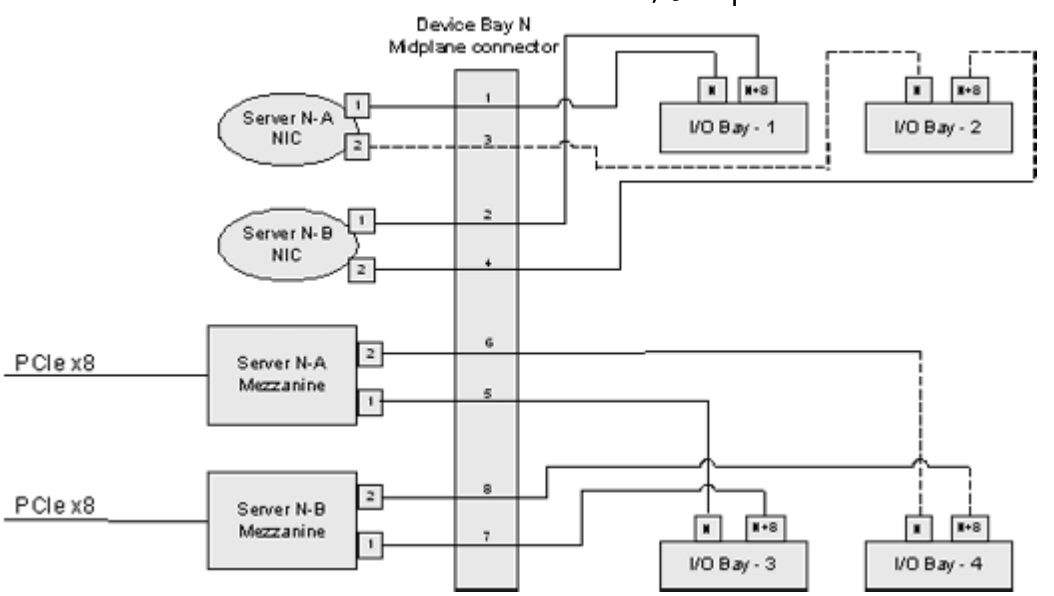


I/O Map

c7000 Enclosure Notes:

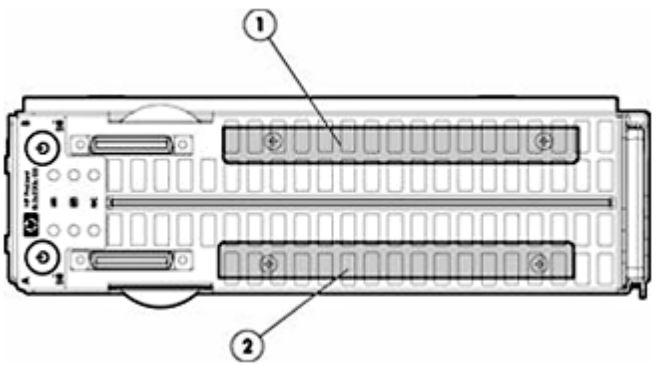
- Embedded NIC Port 1 from each server (Server A and Server B) is mapped to Interconnect bays 1 and 2 which support only Ethernet devices
- Embedded NIC Port 2 from each server (Server A and Server B) is mapped to Interconnect bays 3 & 4 which support only Ethernet devices in configurations using the BL2x220
- The BL2x220 mezzanine slots connect to interconnect devices in Interconnect Bays 5 & 6 or 7 & 8

HP ProLiant BL2x220c - c3000 I/O Map



c3000 Enclosure Notes:

- Embedded NIC Port 1 from each server (Server A and Server B) can be accessed with an Ethernet interconnect in Interconnect bay 1
- Embedded NIC Port 2 from each server (Server A and Server B) is mapped to interconnect bay 2
- The BL2x220 mezzanine slots connect to interconnect devices in Interconnect Bays 3 & 4. The fabric type for the mezzanine slots and their interconnects must all be the same for c3000 configurations with the BL2x220.



1 1 x SFF SATA Non-Hot Plug Hard Drives
2 1 x SFF SATA Non-Hot Plug Hard Drives

Hard Drives

Serial-ATA (SATA) Non-Hot Plug Entry (ETY) Hard Drive

	Quantity Supported	Position Supported	Controller
120GB 1.5G SATA 5.4K NHP SFF ETY HDD	1 per server node	1	Embedded SATA

External Storage

	Quantity Supported	Position Supported	Host Controller or Adapter
XP Disk Array Systems	Please see the XP Disk Array Systems QuickSpecs below to determine configuration requirements	External	Please see the XP Disk Array Systems Quick Specs for the latest list of supported HBAs

HP StorageWorks XP10000 Disk Array:
http://h18006.www1.hp.com/products/storageworks/xp10000/index.html (Worldwide)

Enterprise Virtual Array Systems	Please see the XP Disk Array Systems QuickSpecs below to determine configuration requirements	External	Please see the XP Disk Array Systems Quick Specs for the latest list of supported HBAs

HP StorageWorks Enterprise Virtual Array Family
http://h18006.www1.hp.com/products/quickspecs/12408_div/12408_div.html (Worldwide)

System Unit	**Dimensions** (H x W x D) (with bezel)	7.154 x 2.19 x 20.058 in (18.17 x 5.56 x 50.95 cm)	
	Weight (approximate)	Maximum (all hard drives and processors installed)	13 lb (5.9) kg)
		Minimum (one hard drive and processor installed)	10.75 lb (4.87 kg)
	Power Specifications	For power specifications including Input Requirements, BTU Rating, and Power Supply Output, please see the HP BladeSystem c-Class Infrastructure QuickSpecs located at URL: http://h18000.www1.hp.com/products/quickspecs/12517_div/12517_div.html To review typical system power ratings use the HP BladeSystem Power Sizer which is available via the online tool located at URL: http://www.hp.com/go/bladesystem/powercalculator	
	System Inlet Temperature	Operating	10° to 35°C (50° to 95°F) at sea level with an altitude derating of 1.0°C per every 305 m (1.8°F per every 1000 ft) above sea level to a maximum of 3050 m (10,000 ft), no direct sustained sunlight. Maximum rate of change is 10°C/hr (18°F/hr). The upper limit may be limited by the type and number of options installed. System performance may be reduced if operating with a fan fault or above 30°C (86°F).
		Non-operating	-30° to 60°C (-22° to 140°F). Maximum rate of change is 20°C/hr (36°F/hr).
	Relative Humidity (non-condensing)	Operating	10 to 90% relative humidity (Rh), 28°C (82.4°F) maximum wet bulb temperature, non-condensing.
		Non-operating	5 to 95% relative humidity (Rh), 38.7°C (101.7°F) maximum wet bulb temperature, non-condensing.
	Altitude	Operating	3050 m (10,000 ft). This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
		Non-operating	9144 m (30,000 ft). Maximum allowable altitude change rate is 457 m/min (1500 ft/min).
	Acoustic Noise	For acoustic noise specifications, please see the HP BladeSystem c-Class Infrastructure QuickSpecs located at URL: http://h18000.www1.hp.com/products/quickspecs/12517_div/12517_div.html	

Technical Specifications

Embedded Dual-port NC326i Gigabit Server Adapter	Network Processor	Broadcom 5715S
	Data Transfer Method	Four lane (x4) PCI Express
	Network Transfer Rate	1000 Mb/s half duplex (theoretical maximum value)
	IEEE Compliance	802.1p, 802.1Q, 802.3, 802.3ad, and 802.3x
	Standard Features	• TCP/IP offload engine (TOE) for Microsoft Windows • iSCSI Boot for Linux • 9K jumbo frames • TCP/IP checksum offload (TCO) • Large send offload (LSO) • Interrupt coalescence • Dual address cycles (DAC) • Wake-on-LAN (WOL) • Pre-boot execution environment (PXE) • ProLiant Teaming including Network Fault Tolerance, Transmit Load Balancing, and Switch-Assisted Load Balancing • IPv6 packet transmit and receive (excluding all offload capabilities); IPv6 aware SNMPv1 agents for Windows

Environment-friendly Products and Approach	End-of-life Management and Recycling	Hewlett-Packard offers end-of-life HP product return, trade-in, and recycling programs in many geographic areas. For trade-in information, please go to http://www.hp.com/go/green. To recycle your product, please go to: http://www.hp.com/go/green or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/green. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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For hard drives, 1GB = 1 billion bytes. Actual formatted capacity is less.